

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
10 June 2004 (10.06.2004)

PCT

(10) International Publication Number
WO 2004/049319 A1

(51) International Patent Classification:
7/12, 7/135

G11B 7/08,

(74) Agent: BERGGREN OY AB; P. O. Box 16, FIN-00101
Helsinki (FI).

(21) International Application Number:

PCT/FI2002/000954

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date:

27 November 2002 (27.11.2002)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant (*for all designated States except US*): NOKIA CORPORATION [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI).

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

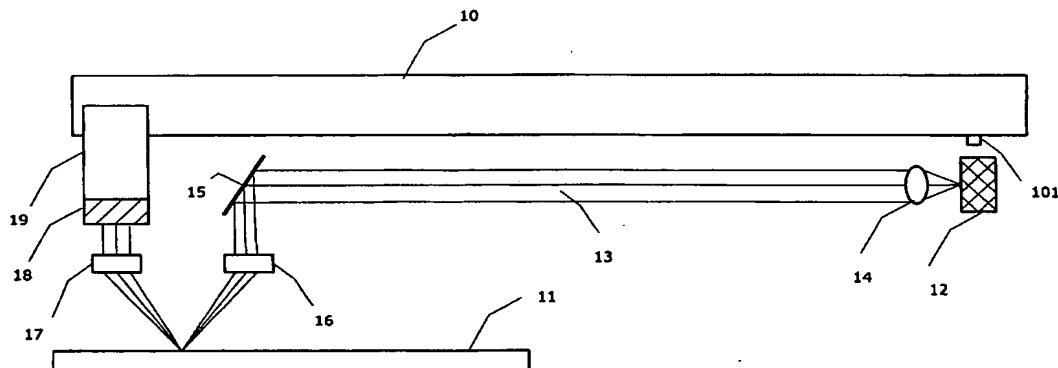
(75) Inventors/Applicants (*for US only*): MÄKELÄ, Jakke [FI/FI]; Vanha Hämeentie 110 D 61, FIN-20540 Turku (FI). AIKIO, Janne, Kari [FI/FI]; Lyytintie 10 C, FIN-90540 Oulu (FI). AIKIO, Sanna [FI/FI]; Lyytintie 10 C, FIN-90540 Oulu (FI). KATAJA, Kari, Juhani [FI/FI]; Virkatie 8 I 34, FIN-90570 Oulu (FI). ALAJOKI, Teemu [FI/FI]; Koskitie 51 B 32, FIN-90500 Oulu (FI).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: READ/WRITE DEVICE FOR OPTICAL MEMORY AND METHOD THEREFORE



(57) Abstract: A method and miniaturizable device is described to read/write information to an optical storage medium (11). A device comprises one or more light sources (12) bounded up with an access unit (10) which is arranged to be controllable to a position, in which light beams (21, 22) are transmitted transversal towards an optical storage medium, and reflected light beams (33) are analysed by a detector element (18, 26) which further informs the access unit whether to move or stand still to keep light beams in focus and on track. A device according to the invention is possible to implement in a small size and low weight due to reduced component count and thin access unit geometries. A communication device (80) according to the invention may be implemented to fulfil a crucial need for ultraminiature range of communication devices.

WO 2004/049319 A1

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 02/00954

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G11B 7/08, G11B 7/12, G11B 7/135

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6215755 B1 (SNYDER, J.J. ET AL), 10 April 2001 (10.04.01), column 2, line 12 - line 31; column 3, line 3 - column 6, line 35	1-6,10, 17-21,23, 27-32,35, 42-46
A	--	9,24,47
A	US 6278682 B1 (TAKISHIMA, S. ET AL), 21 August 2001 (21.08.01), column 6, line 17 - column 7, line 32; column 9, line 13 - column 10, line 50	1-6,9,10, 17-21,24, 27-32,35, 42-47
	--	

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

23 May 2003

Date of mailing of the international search report

06-06-2003

Name and mailing address of the ISA/

Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Bo Gustavsson /OGU

Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 02/00954

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5771219 A (MIYAMOTO, M.), 23 June 1998 (23.06.98), column 12, line 22 - column 14, line 7; column 14, line 31 - column 15, line 42, figures 10,12,13	1-5,10, 17-21,27-31, 35,42-46
A	--	7,11-13,33, 36-38
Y	US 4253723 A (KOJIMA, C. ET AL), 3 March 1981 (03.03.81), column 3, line 37 - column 5, line 47; column 11, line 58 - column 12, line 65	1-3,6,10,17, 27-29,32,35, 42
Y	US 4157568 A (OHKI, H. ET AL), 5 June 1979 (05.06.79), column 7, line 32 - column 10, line 30, figure 4	1-4,10, 27-30,35
A	--	7,12,15,33, 37
Y	WO 9809392 A2 (QUINTA CORPORATION), 5 March 1998 (05.03.98), figure 5, abstract	23
A	--	1,2,7,9,10, 15,17,24,27, 28,33,47
A	PATENT ABSTRACTS OF JAPAN Vol. 1997, No. 07, 31 July 1997 (1997-07-31) abstract & JP 90 73657 A (MAEDA TAKANORIOTAKI MASARUKOYANAGI HAJIME) 18 March 1997 (1997-03-18)	1-3,10,12, 17,19,20,21, 27-29,35,37, 42,44-46
	-- -----	

INTERNATIONAL SEARCH REPORT
Information on patent family members

29/04/03

International application No.
PCT/FI 02/00954

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
US	6215755	B1	10/04/01	NONE		
US	6278682	B1	21/08/01	JP	11232675 A	27/08/99
US	5771219	A	23/06/98	DE	69423671 D,T	17/08/00
				EP	0621590 A,B	26/10/94
				JP	7006405 A	10/01/95
				JP	7169085 A	04/07/95
US	4253723	A	03/03/81	AT	370273 B	10/03/83
				AT	735277 A	15/07/82
				AU	511495 B	21/08/80
				AU	2957877 A	26/04/79
				CA	1091966 A	23/12/80
				DE	2746334 A,C	27/04/78
				FR	2368190 A,B	12/05/78
				GB	1577877 A	29/10/80
				JP	53048703 A	02/05/78
				NL	192229 B,C	01/11/96
				NL	7711218 A	18/04/78
				JP	1324424 C	27/06/86
				JP	53048704 A	02/05/78
				JP	60047653 B	23/10/85
US	4157568	A	05/06/79	AT	378091 B	10/06/85
				AT	858277 A	15/10/84
				AU	509203 B	24/04/80
				AU	3101077 A	07/06/79
				CA	1100233 A	28/04/81
				DE	2753195 A	29/06/78
				FR	2393393 A,B	29/12/78
				GB	1551022 A	22/08/79
				JP	53069006 A	20/06/78
				NL	7800038 A	04/07/79

INTERNATIONAL SEARCH REPORT
Information on patent family members

29/04/03

International application No.

PCT/FI 02/00954

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
WO	9809392	A2	05/03/98	CN 1230278 A	29/09/99
				EP 0922281 A	16/06/99
				EP 0922282 A	16/06/99
				EP 0922283 A	16/06/99
				EP 0922284 A	16/06/99
				EP 0929894 A	21/07/99
				EP 0939955 A	08/09/99
				JP 2001502462 T	20/02/01
				JP 2001525972 T	11/12/01
				JP 2002508869 T	19/03/02
				JP 2002511176 T	09/04/02
				KR 2000035877 A	26/06/00
				US 5850375 A	15/12/98
				US 5892745 A	06/04/99
				US 5940549 A	17/08/99
				US 6034938 A	07/03/00
				US 6044056 A	28/03/00
				US 6058094 A	02/05/00
				US 6061323 A	09/05/00
				US 6134207 A	17/10/00
				US 6178150 B	23/01/01
				US 6181673 B	30/01/01
				US 6226233 B	01/05/01
				US 6275455 B	14/08/01
				US 6301403 B	09/10/01
				US 6331968 B	18/12/01
				US 6360035 B	19/03/02
				US 6414911 B	02/07/02
				US 2002012491 A	31/01/02
				WO 9809279 A	05/03/98
				WO 9809280 A	05/03/98
				WO 9809284 A	05/03/98
				WO 9809285 A	05/03/98
				WO 9809286 A	05/03/98
				WO 9809287 A	05/03/98
				WO 9809288 A	05/03/98
				WO 9809289 A	05/03/98